



Airport Master Plan Public Workshop #1



April 27, 2022 | 6:00 PM - 8:30 PM
Washington Dulles International Airport

Significance of IAD on Local / Virginia Economy

Dulles contributed
**51,149 jobs
and \$2.9 billion**
in associated labor income
in the Commonwealth
of Virginia.²

Dulles jobs and visitor
spending generated
\$315 million
in local/state tax revenues.²

LOUDOUN

 **38%** forecasted
population growth¹
 **74%** growth
in jobs¹

2045^{1/}

 +1.5 million people



 +1.1 million jobs

 +648,000 households

SOURCES:

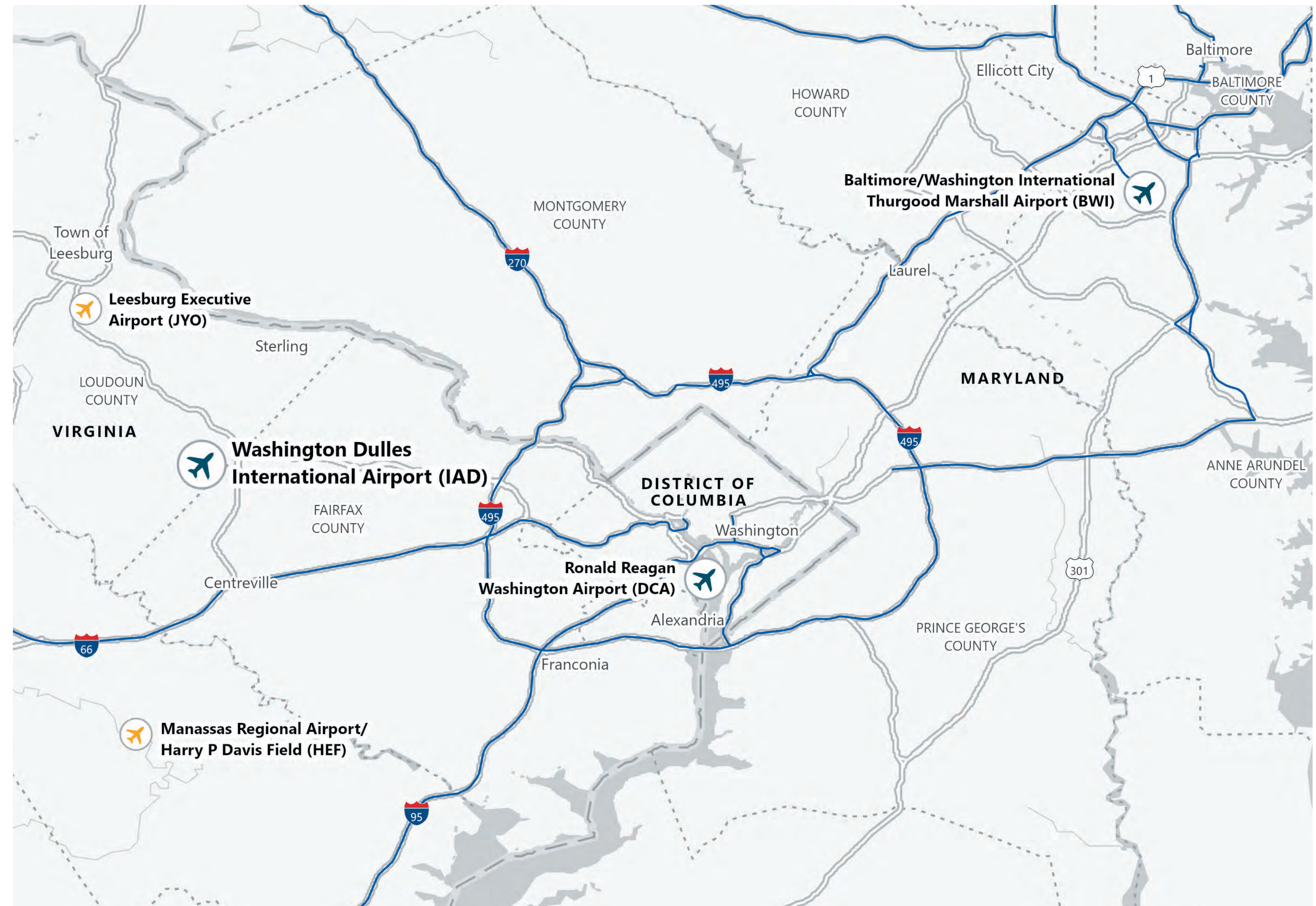
1/ Metropolitan Washington Council of Governments, *Growth Trends to 2045: Cooperative Forecasting in Metropolitan Washington*, October 17, 2018.
2/ Commonwealth of Virginia, Virginia Department of Aviation, *Virginia Airport System Economic Impact Technical Report*, May 2018.

FAIRFAX

 **26%** forecasted
population growth¹
 **36%** growth
in jobs¹

Regional Airports

- **Washington Dulles International Airport**
The National Capitol Region's international gateway Airport and hub for United Airlines, operated by MWAA
- **Ronald Reagan Washington National Airport**
The smaller of the two airports operated by MWAA, serves as the region's national airport and domestic hub for American Airlines
- **Baltimore/Washington International Thurgood Marshall Airport**
International airport serving the Baltimore-Washington Metropolitan Area and a focus city for Southwest Airlines
- **Leesburg Executive Airport**
Busy general aviation airport in the Washington DC area and reliever airport for Washington Dulles
- **Manassas Regional Airport**
Largest general aviation airport in Virginia and reliever airport for Washington Dulles



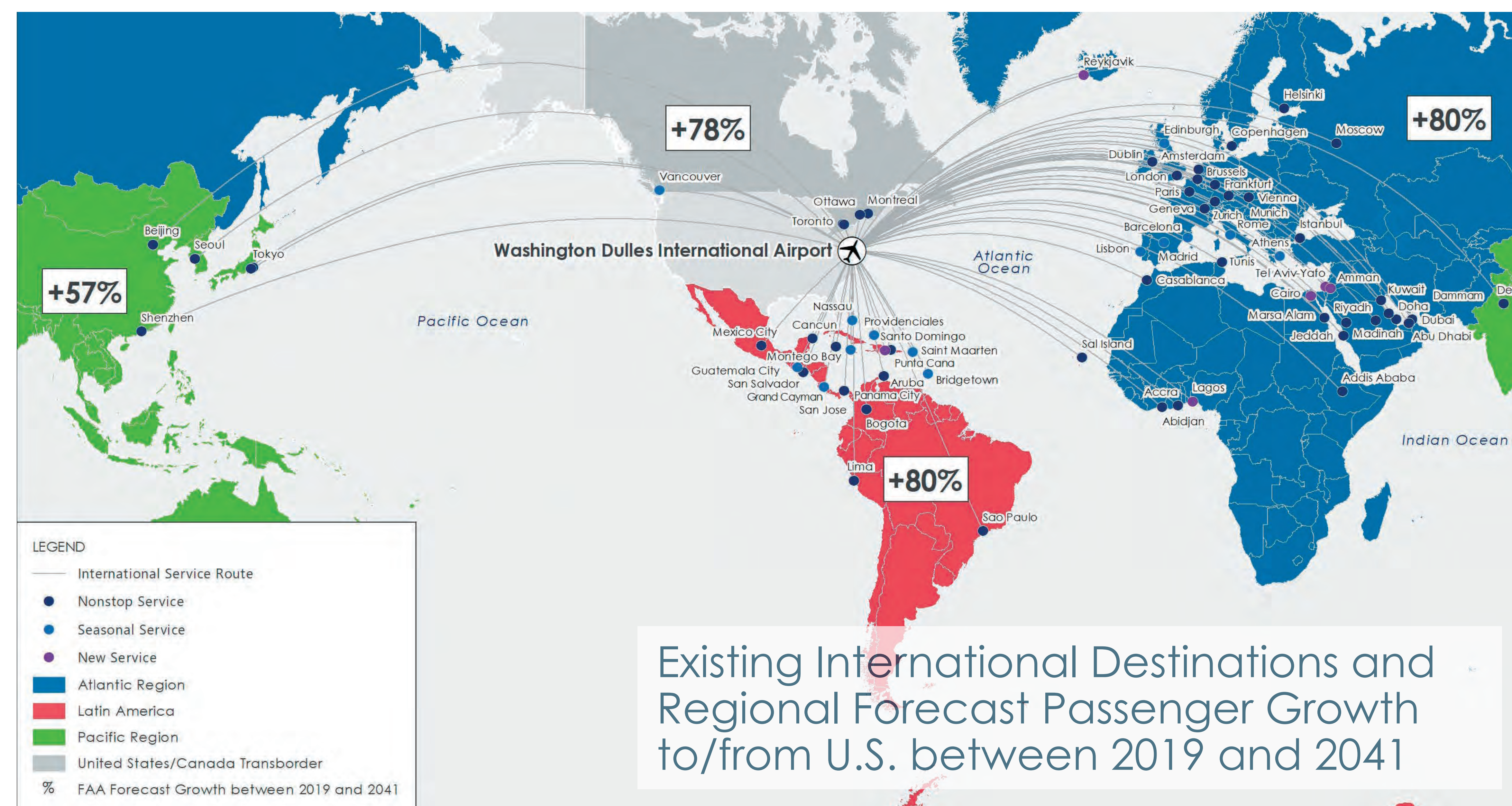
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Air Service Continues to Grow

Potential Passenger Service Expansion Opportunities

- Airline hub expansion
- International service expansion
- Growth in local demand and domestic connecting flights for international passengers



SOURCES: Esri, HERE, DeLorme, MapmyIndia, OpenStreetMap contributors, and the GIS user community, May 2018 (basemap); MWAA, March 2022 (international non-stop destination data); OpenFlights.org, March 2022 (flight arcs); National Science Foundation, National Institutes of Health, 2016 (countries); FAA Aerospace Forecast Fiscal Years 2021 – 2041, Federal Aviation Administration, May 2021 (forecast growth in passengers between 2021 and 2041).

Potential Cargo Service

- Medium-size hub for one integrated cargo carrier
- Expansion of international cargo carriers
- Addition of an eCommerce cargo carrier

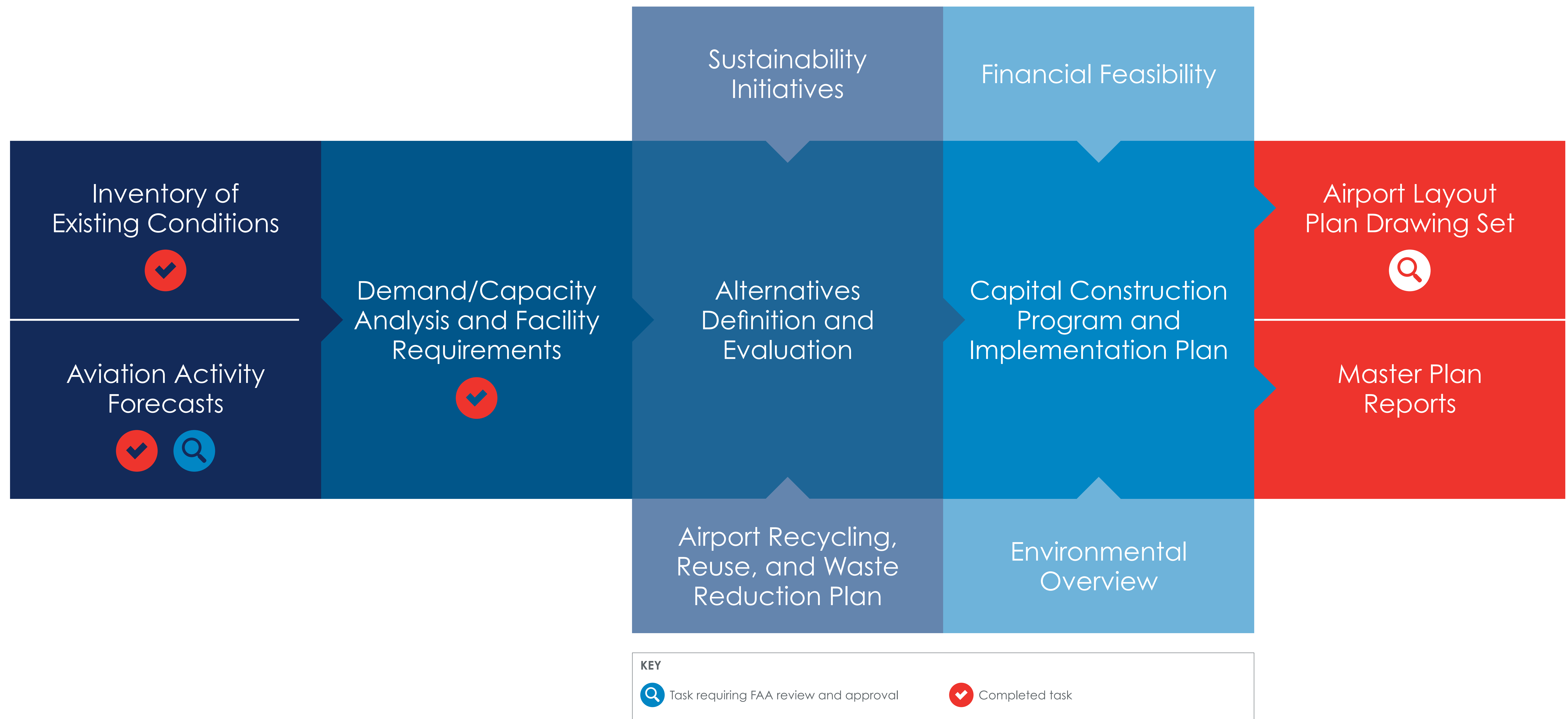


SOURCE: MWAA, 2015 Air Service Development Industry and Community Briefing, November 2014

IAD Master Planning Process

The Master Plan is a 3-year process that will conclude by the end of 2023.

○————— STAKEHOLDER ENGAGEMENT/PUBLIC OUTREACH —————○

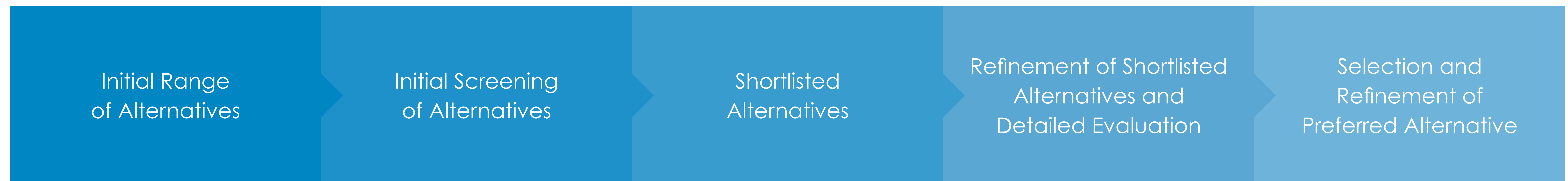


Public Workshop Milestones

Overall Master Plan



Alternatives Definition, Evaluation, and Selection



Public Workshop #1

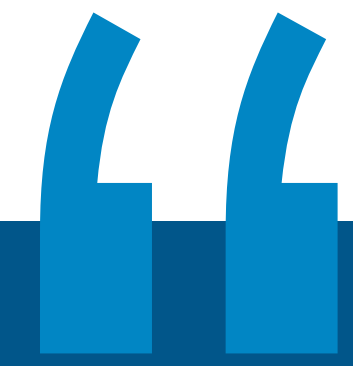
Public Workshop #2



Public Workshop #3



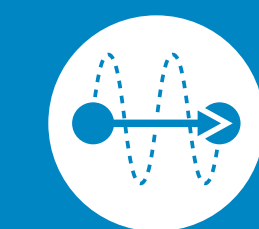
Master Plan Development Priorities



An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand.

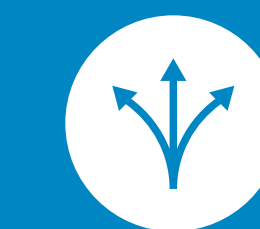
— FAA ADVISORY CIRCULAR 150/5070 – 6B AIRPORT MASTER PLANS

- The focus of the Master Plan is to address long-term (25+ years) needs by establishing a roadmap for incremental development to meet future demand.
- Development goals and priorities were formulated to guide the Master Planning process to ensure the resulting analyses and recommendations are aligned with the Airport Authority's strategic business plans and initiatives.
- Other considerations may include the highest and best use of existing infrastructure given long-term development plans.



EFFICIENT

Expedite and simplify the movement of aircraft, passengers, vehicles, baggage, cargo, and consumer goods (concessions).



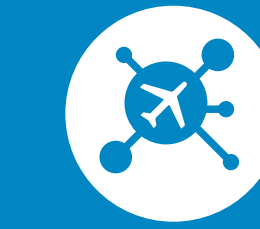
DIVERSIFIED

Increase the Airport's revenue base by expanding its aeronautical service offerings and facilitate non-aeronautical development opportunities.



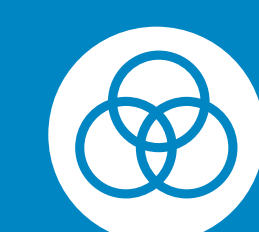
BALANCED

Achieve and maintain a balance in the capacity of facilities with associated demand levels.



FLEXIBLE

Ensure facilities can be configured in a manner that allows them to adjust to varying demand levels and user needs.



INTEGRATED

Enhance the Airport's role as a regional asset, sensitive to the needs of the local community and compatible with regional transportation initiatives.



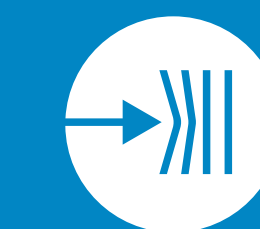
MODERNIZED

Upgrade and/or replace outdated facilities and infrastructure in a financially viable manner.



SUSTAINABLE

Develop the Airport's facilities and infrastructure in a sustainable manner.



RESILIENT

Construct facilities and infrastructure while reducing the Airport's vulnerabilities and known risks.

Aircraft Operations Forecasts

- **Baseline Forecast**
Estimates future airport activity predominantly based on trend analysis of historical activity, with consideration of IAD of existing share of the Washington Metropolitan Area’s demand for air service, socioeconomic data, and local/ national trends.
- **Accelerated Baseline Forecast**
Considers current air service development initiatives.
- **Federal Aviation Administration (FAA) Terminal Area Forecast (TAF)**
Independent forecast generated for federal funding and FAA staffing purposes.

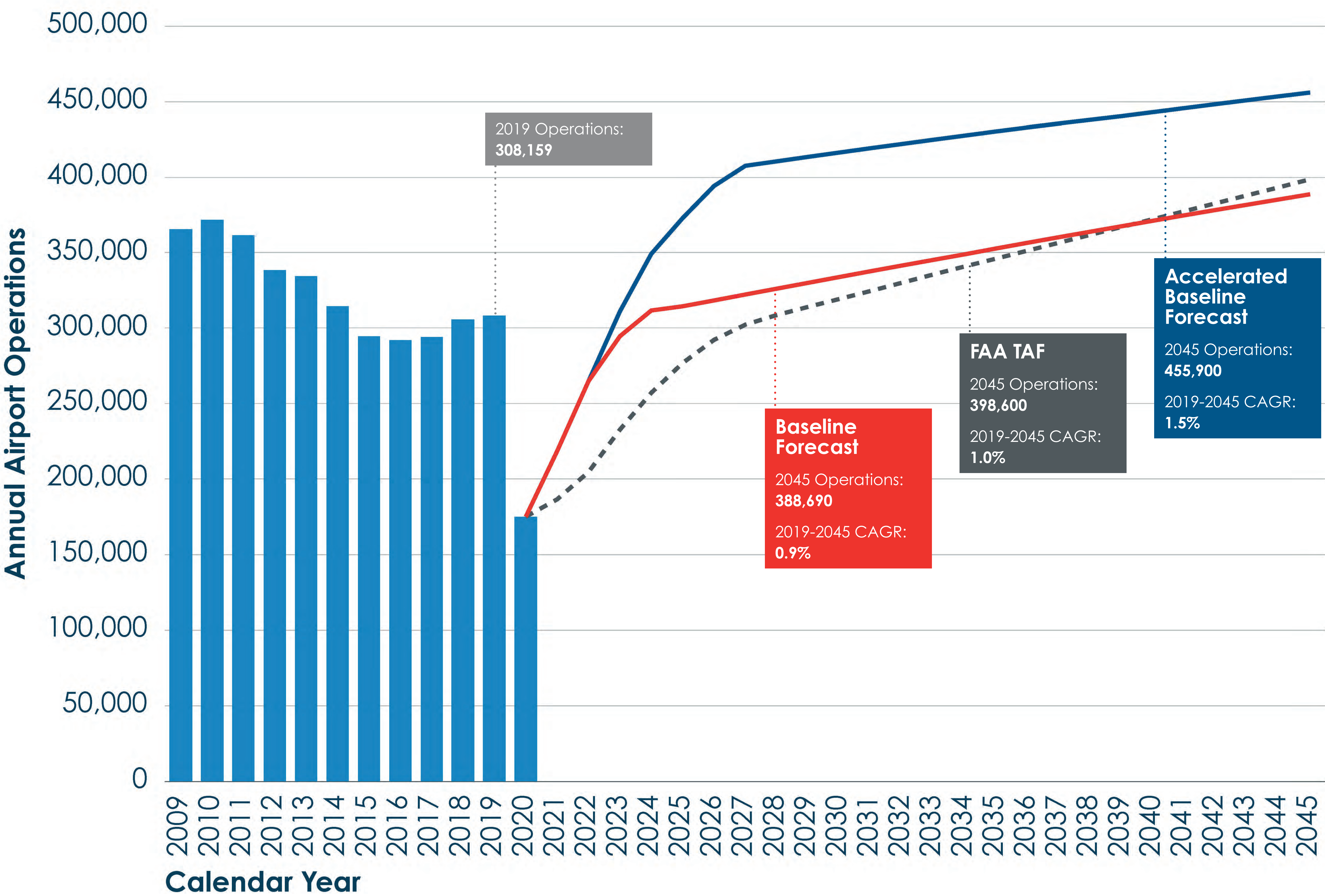
Legend

- Historical Operations
- Baseline Forecast
- Accelerated Baseline Forecast
- - - FAA TAF

NOTES:
CAGR - Compound Annual Growth Rate
FAA - Federal Aviation Administration
TAF - Terminal Area Forecast

SOURCES: Metropolitan Airport Authority, October 2020; Federal Aviation Administration, Terminal Area Forecast FY 2020-2045, May 2021; Ricondo & Associates, Inc., November 2020.

Annual Airport Operations

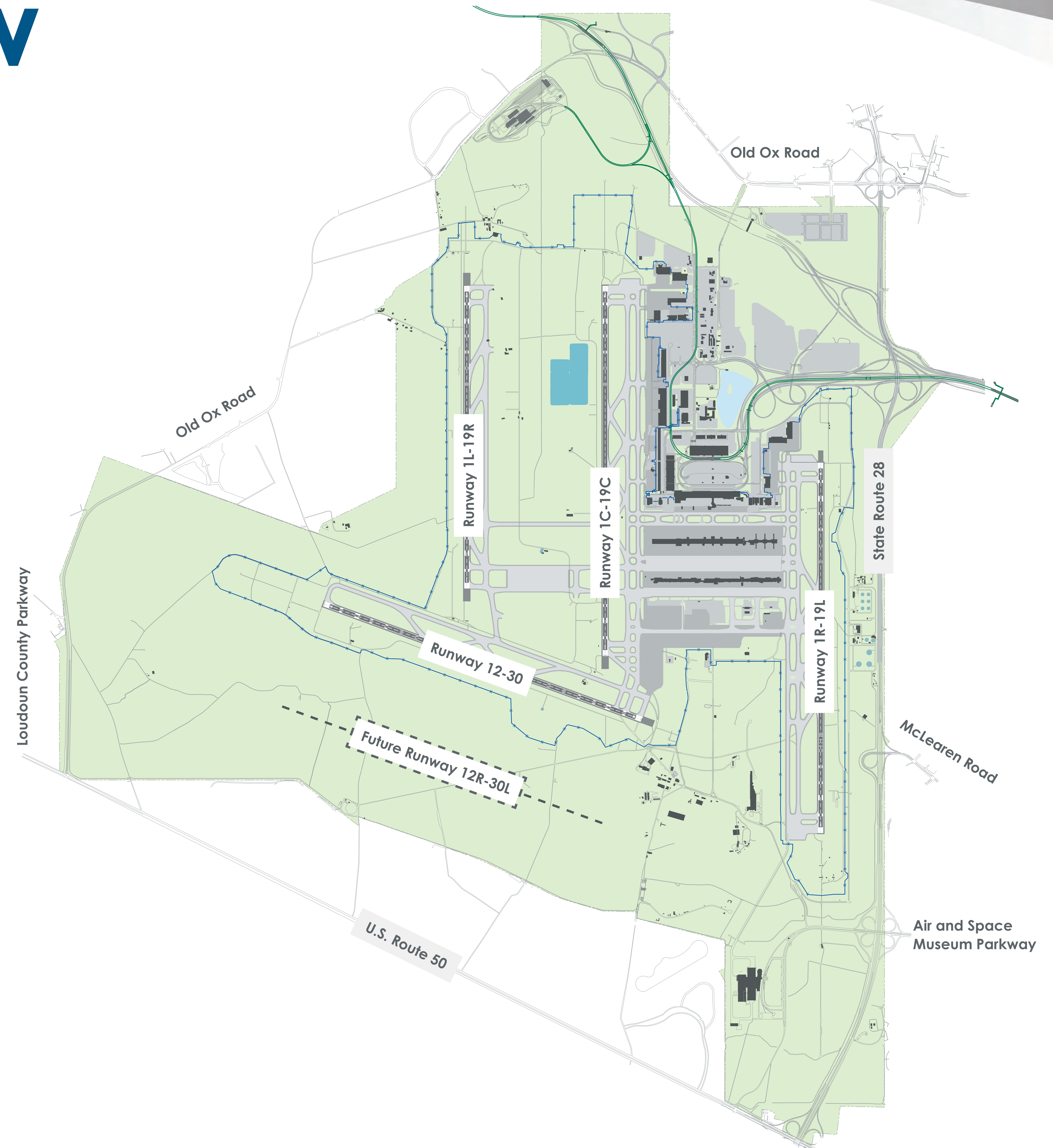


Airfield Overview

The Washington Dulles International Airport is serviced by four runways today:

- 1L/19R - 9,400 feet
- 1C/19C - 11,500 feet
- 1R/19L - 11,500 feet
- 12/30 - 10,500 feet

The airfield has the capability to accommodate a fifth Runway, which will run parallel to Runway 12/30.



Airfield Needs

Runway System

The planned 5th runway will improve the operational efficiency of the airfield, by:

- increasing the Airport's capacity,
- reducing operational delays,
- enhancing the ability to balance aircraft arrival and departure operations, and
- mitigating greenhouse gas emissions.

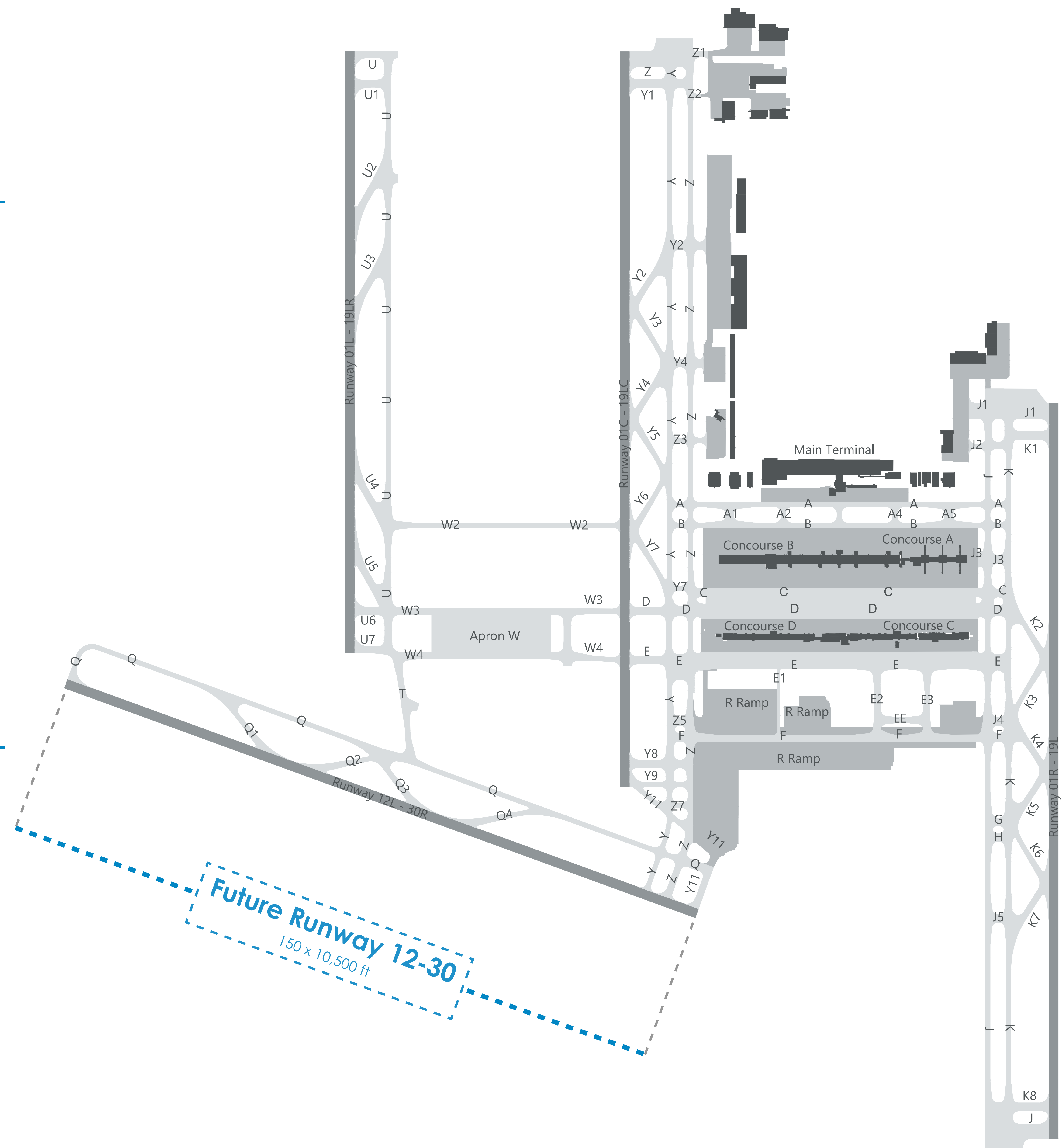
The master plan will evaluate the timing of the 5th runway.

Taxiway System

The existing taxiway system is considered adequate to serve existing and projected demand.

The only modifications this Master Plan will evaluate are:

- compliance with FAA design standards,
- Airfield circulation enhancements, and
- accessibility to future aeronautical facilities development.



Enplaned Passenger Forecasts

- Baseline Forecast**
Estimates future airport activity predominantly based on trend analysis of historical activity, with consideration of IAD of existing share of the Washington Metropolitan Area’s demand for air service, socioeconomic data, and local/national trends.
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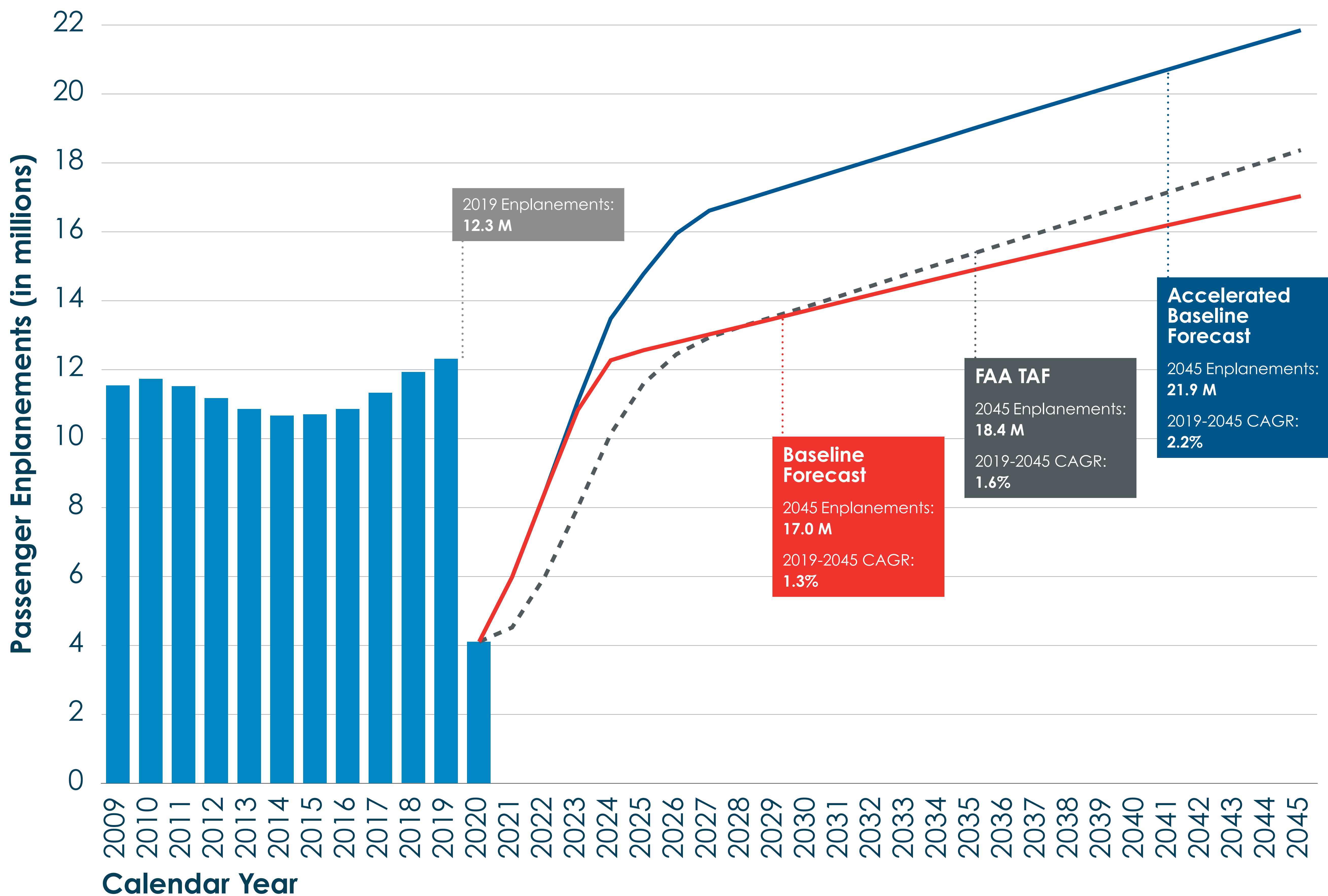
Legend

- Historical Operations
- Baseline Forecast
- Accelerated Baseline Forecast
- FAA TAF

NOTES: Federal Aviation Administration Terminal Area Forecast (TAF) represents revenue passengers and is presented in federal fiscal year (October 1 to September 30).
CAGR - Compound Annual Growth Rate
FAA - Federal Aviation Administration
TAF - Terminal Area Forecast

SOURCES: Metropolitan Washington Airport Authority, October 2020; Federal Aviation Administration, Terminal Area Forecast FY 2020 – 2045, May 2021; Ricondo & Associates, Inc., November 2020.

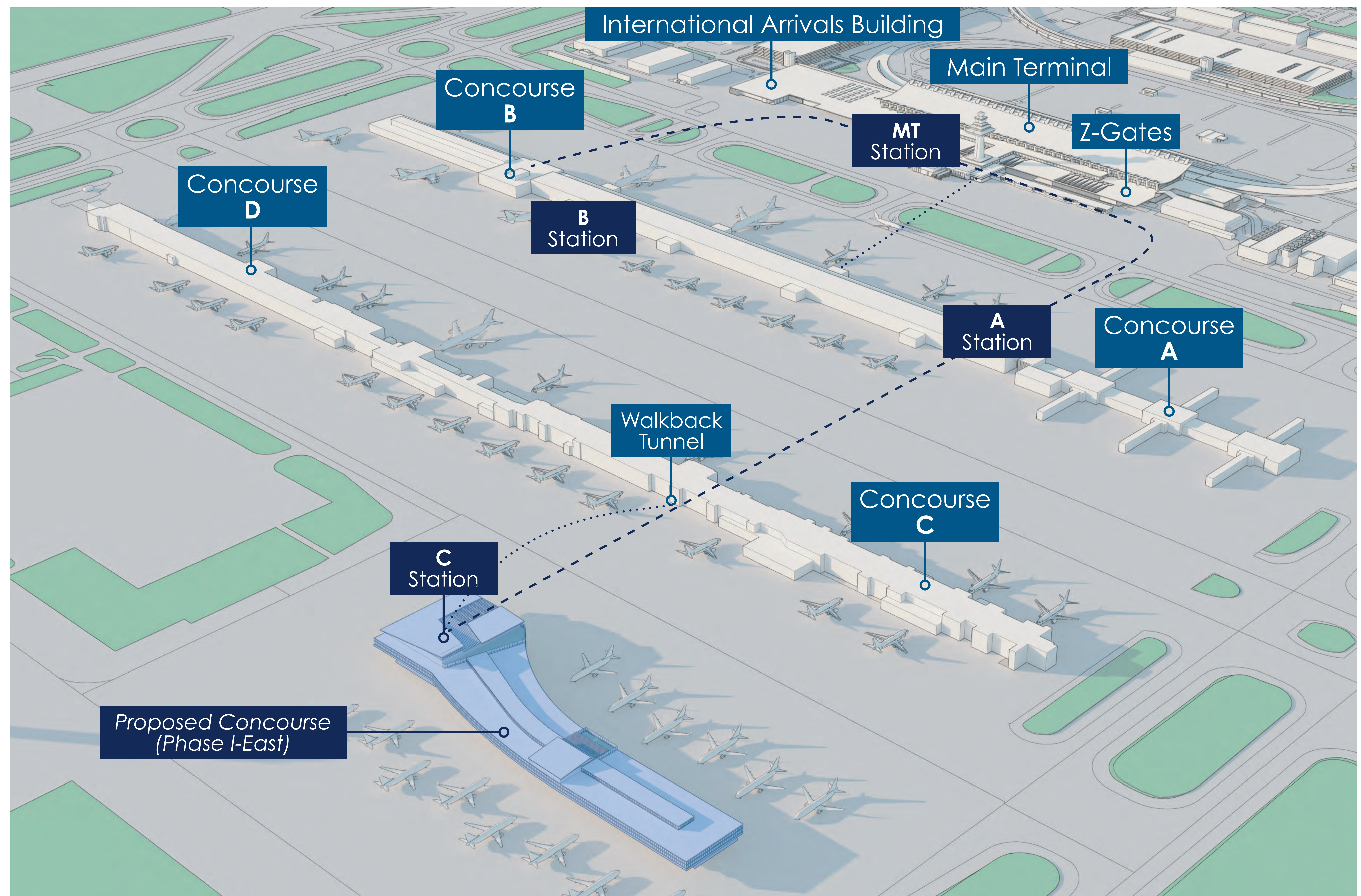
Annual Passenger Enplanements



Passenger Terminal Complex

Primary Components

- **Main Terminal**
Primary function to process passengers and baggage
 - Airline Check-in
 - Security Screening
 - Baggage Handling Systems
 - Federal Inspection Services
 - Terminus of AeroTrain and Mobile Lounges
- **Concourses**
Aircraft enplaning and deplaning area
 - Passenger holdrooms
 - Concessions
 - Airline Clubs and other Amenities
- **Passenger Conveyance Systems**
Movement of passengers between Main Terminal and Concourses
 - AeroTrain
 - Mobile Lounges
 - Plane Mates



NOTE: MT - Main Terminal

Legend

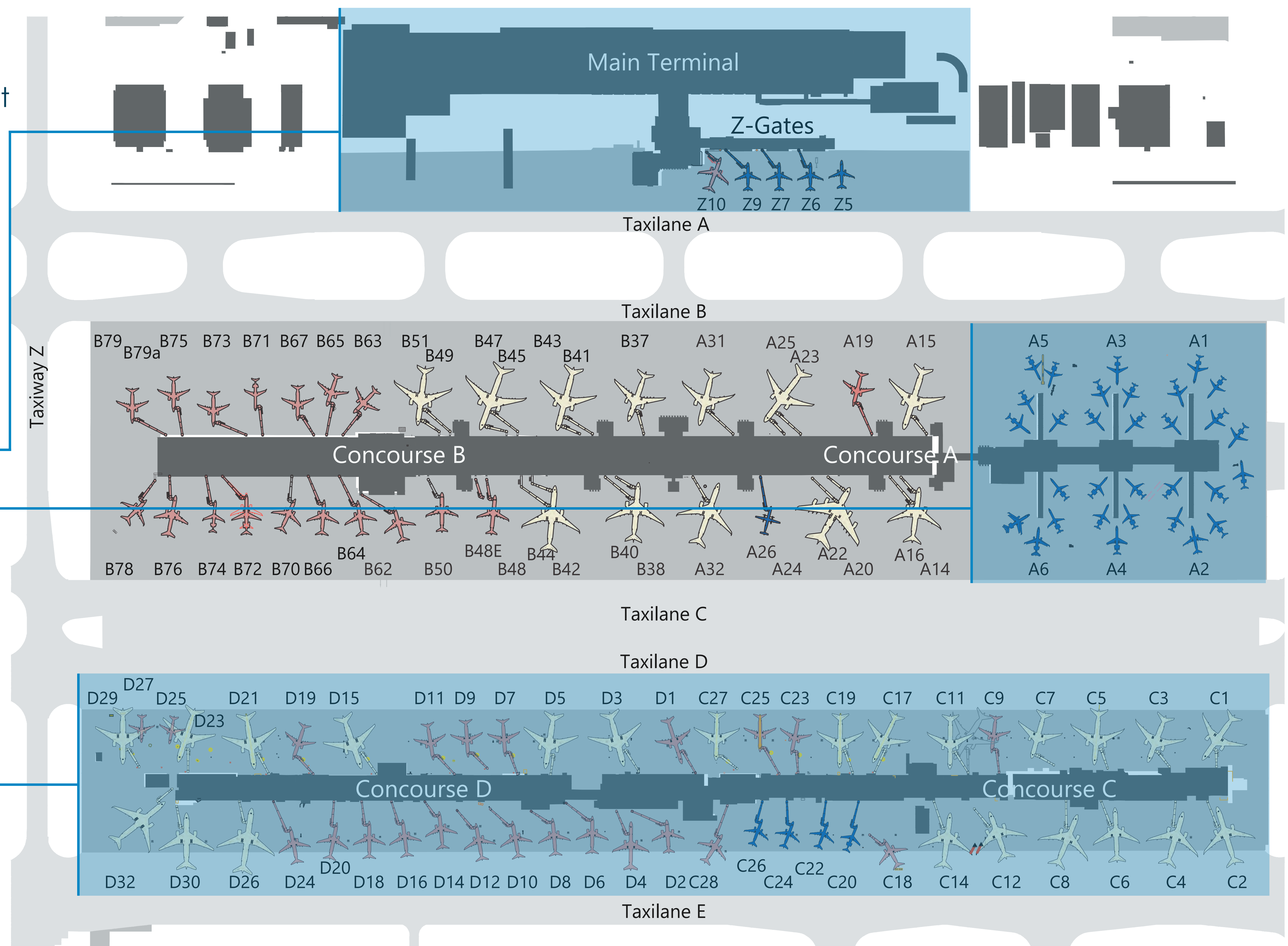
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|-----------------------------------|-------------------------|
| ■ Passenger Processing Facilities | --- AeroTrain Tracks |
| ■ AeroTrain Station | Pedestrian Tunnel |

Passenger Terminal Development Opportunities

- Washington Dulles International Airport's passenger terminal facilities can accommodate up to 144 aircraft, depending on the mix of aircraft (including remote aircraft parking positions).
- The Master Plan anticipates an additional 24 contact gates are needed to meet the demand of the Accelerated Baseline Forecast through CY 2045.
- In addition, the Master Plan will evaluate opportunities for:
 - Expansion of the Main Terminal building,
 - Partial redevelopment of Concourse A, and
 - Replacement/redevelopment of Concourses C/D.

Legend

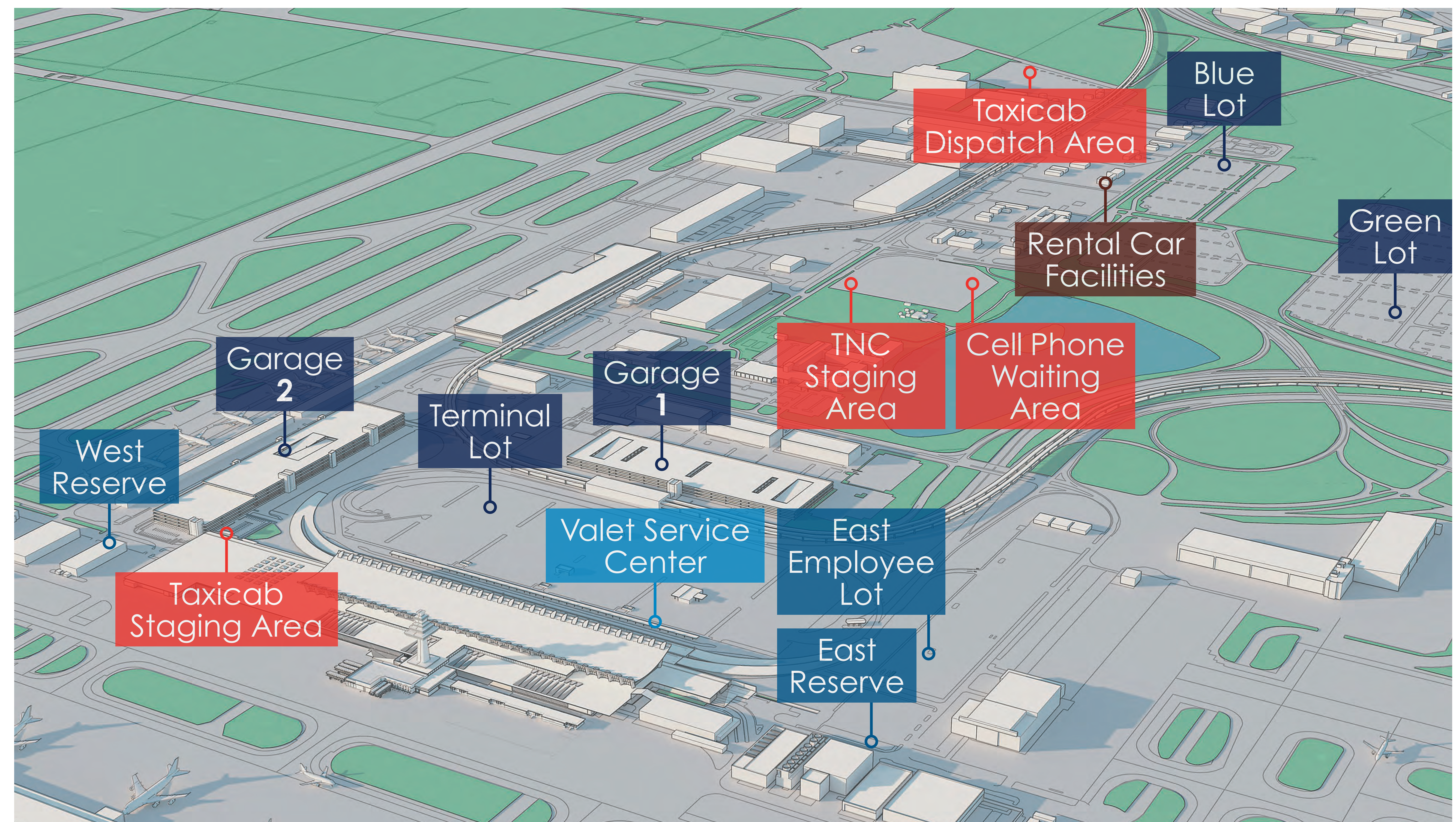
- ✈ Regional Aircraft
- ✈ Narrowbody Aircraft
- ✈ Accelerated Baseline Forecast
- Existing Buildings
- Existing Taxiway Pavement
- Existing Apron Pavement



Vehicle Parking, Staging, and Rental Car Needs

Projected Demand/Capacity Relationships

- Consolidation of rental car facilities to be considered.
- Parking Garages 1 and 2 estimated to exceed capacity prior to 2024.
- Overall, the public parking facilities are estimated to exceed capacity prior to 2030.
- The TNC staging and taxicab dispatch areas are estimated to exceed capacity prior to 2035.
- Potential relocation of the Cell Phone Waiting Area to be considered.
- Future vehicular parking and staging needs may shift among transportation modes due to evolving passenger preferences. Due to these uncertainties, a variety of demand scenarios will be considered.



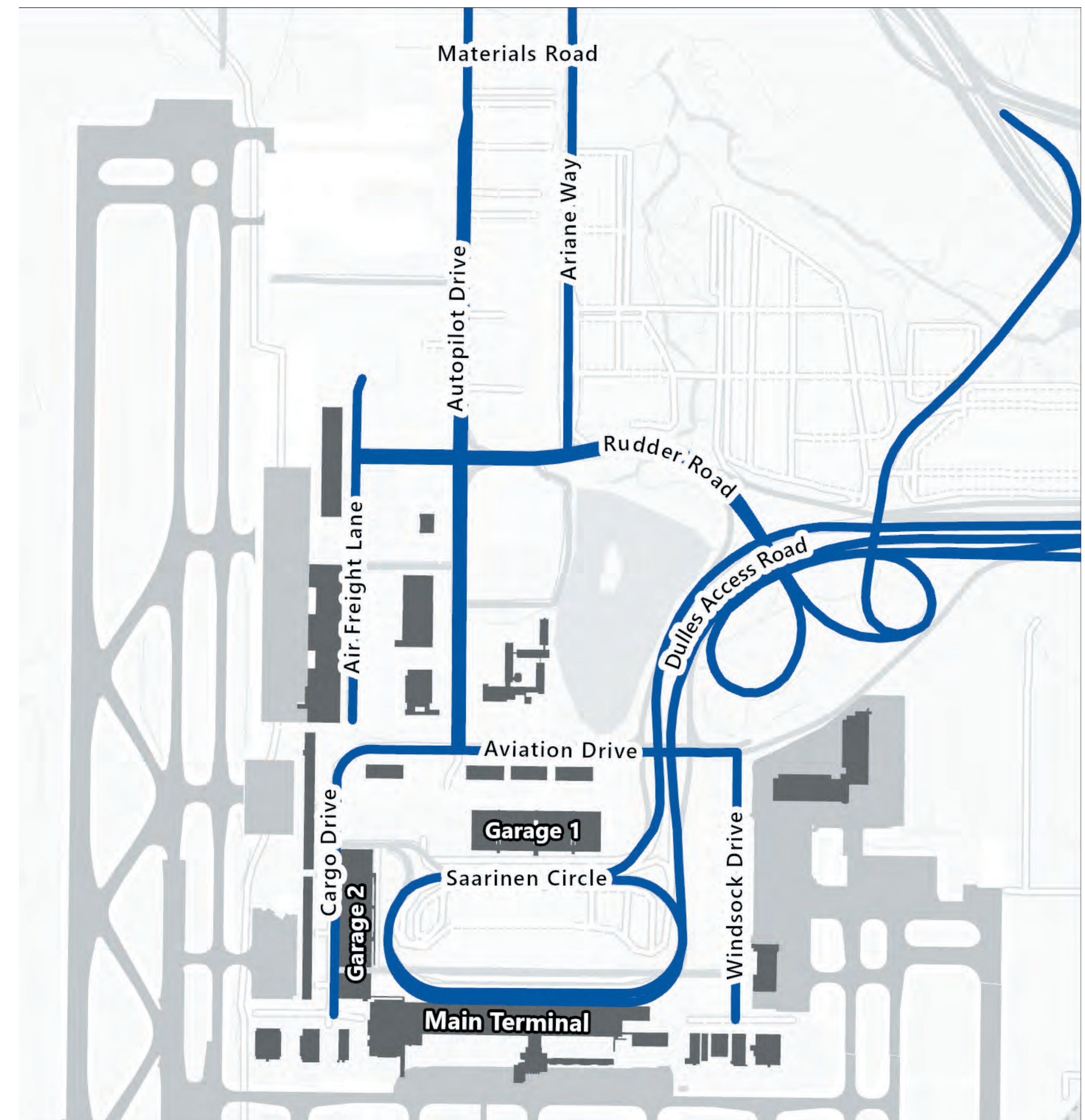
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| | | |
|----------------|-----------------------|-------|
| Public Parking | Employee Parking | Other |
| Staging Areas | Rental Car Facilities | |

NOTES: North employee parking lot not shown.
TNC - Transportation Network Company (Uber/Lyft)

Terminal Area Roadways

- **Air Freight Lane** — provides access to Cargo Buildings 5 and 6
- **Ariane Way** — provides access to the North Employee Parking Lot
- **Autopilot Drive** — provides access to several Airport-related facilities, including multiple airline hangar complexes, the IAD taxi dispatch facility, cell phone and TNC staging areas, rental car facilities, public parking Garage 1, and the Washington IAD Marriott hotel
- **Aviation Drive** — provides access to public parking Garage 1 and Airport administration buildings
- **Cargo Drive** — provides access to Cargo Buildings 1-4, various Airport support facilities, as well as public parking Garage 2, and is primarily used by commercial vehicles and Washington Flyer taxicabs to access the Main Terminal
- **Materials Road** — provides the northern boundary for the existing rental car facilities and provides access to Airport support facilities
- **Rudder Road** — provides access to the economy parking area and an exit from the cell phone and TNC staging areas return to the Main Terminal
- **Saarinen Circle** — encloses the terminal surface parking area and includes a return-to-terminal ramp which can only be accessed from the Arrivals Level
- **Windsock Drive** — provides access to the Dulles Jet Center, Signature Flight Support (Signature), and LSG Sky Chefs, and is primarily used by commercial vehicles and Washington Flyer taxicabs to exit the terminal curbside

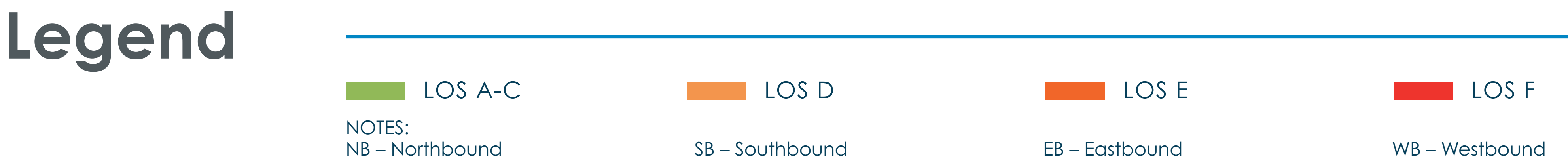
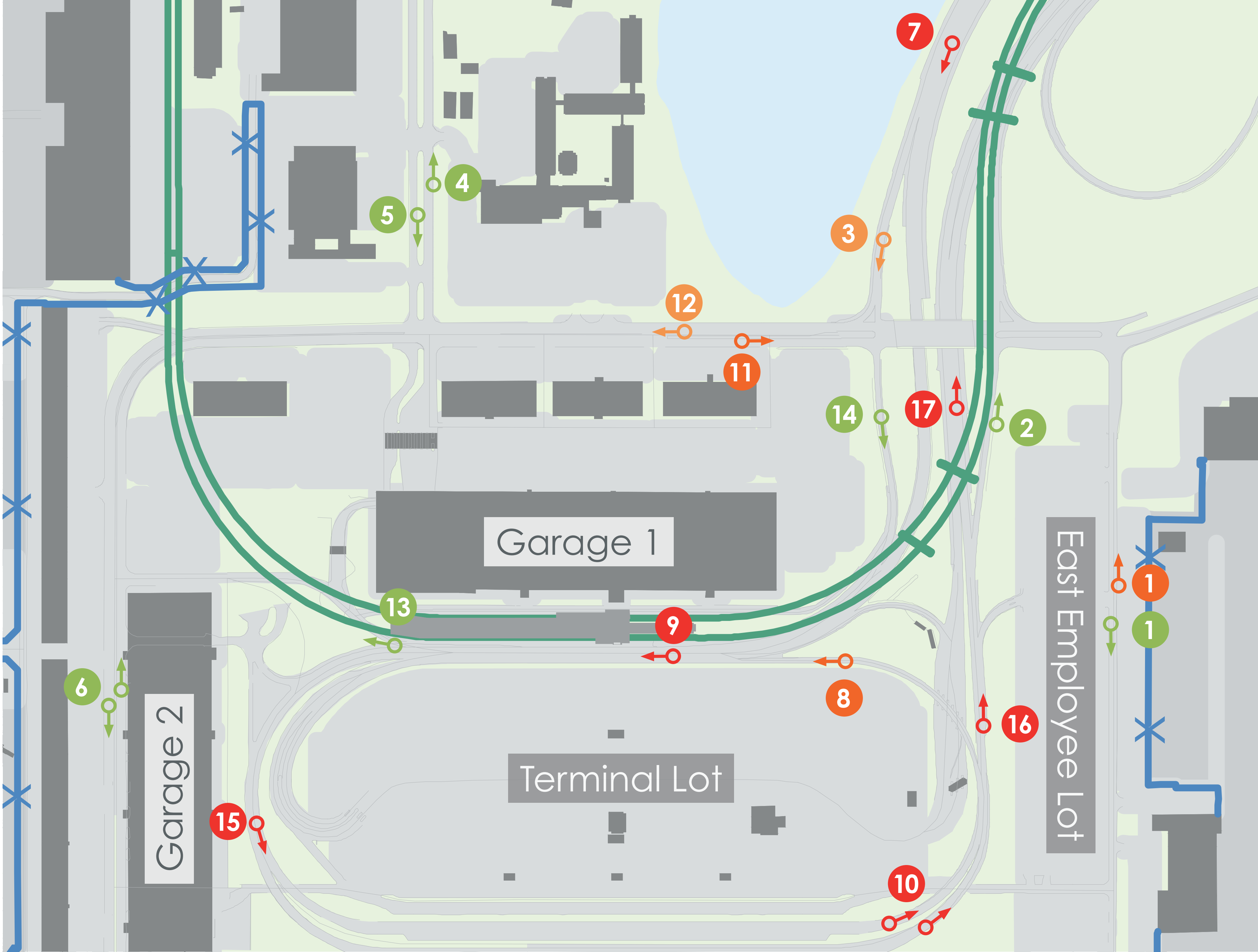


NOTE: TNC - Transportation Network Company (Uber/Lyft)

Existing Terminal Roadways: 2045 Capacity Analysis

The level of service (LOS) depicted reflects the 2045 roadway conditions if no enhancement projects are implemented. All roadway segments that are projected to achieve LOS "D" through "F" will require improvements during the 25-year planning horizon.

| Reference Number | Description | 2045 | |
|------------------|---|------------------|------------------|
| | | Peak Hour Volume | Level of Service |
| 1 NB | Windsock Drive NB | 923 | E |
| 1 SB | Windsock Drive SB | 140 | A |
| 2 | Ramp from Dulles Access Road NB to Aviation Drive | 551 | B |
| 3 | Ramp from Dulles Access Road SB to Aviation Drive | 704 | D |
| 4 | NB Autopilot Drive | 993 | C |
| 5 | SB Autopilot Drive | 1016 | C |
| 6 NB | Cargo Drive NB | 85 | A |
| 6 SB | Cargo Drive SB | 788 | B |
| 7 | Dulles Access Rd WB | 6505 | F |
| 8 | Recirc Ramp | 866 | E |
| 9 | Saarinen Circle | 6787 | F |
| 10 Arrivals | POV Arrivals Exit Ramps | 2249 | F |
| 10 Departures | POV Departures Exit Ramps | 3820 | F |
| 11 | EB Aviation Dr | 1673 | E |
| 12 | WB Aviation Dr | 1358 | D |
| 13 | Copilot Way/Exit To Parking Garage | 153 | A |
| 14 | Saarinen Circle from Aviation Dr | 120 | A |
| 15 | Saarinen Circle Approaching Curbs | 6069 | F |
| 16 | Dulles Access Rd NB After Recirc | 5203 | F |
| 17 | Dulles Access Rd NB After Merge with Parking | 5203 | F |



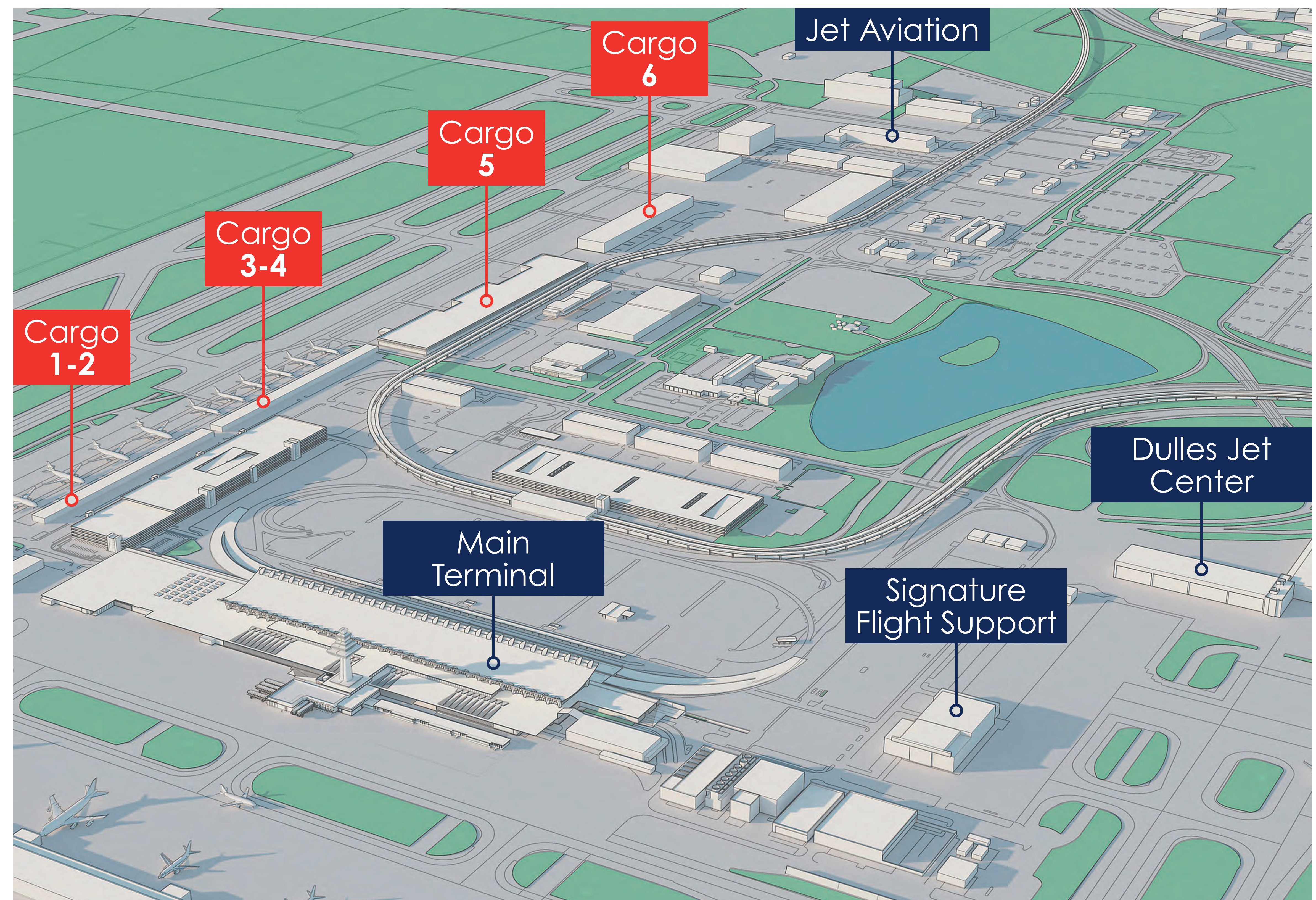
Air Cargo and General Aviation Facilities

Air Cargo

- The Cargo facilities comprised of six warehouse buildings, truck docks, and aircraft parking areas.
- These facilities were constructed incrementally since the Airport's initial development in 1962.
- Many of the facilities are in a state of disrepair and functionally outdated.
- This master plan will evaluate the needs to meet projected 2045 air cargo demands, with consideration for replacing old and antiquated facilities.

General Aviation

- General Aviation (GA) facilities include the fixed base operators (FBOs) that provide non-airline service to IAD, including private and leisure flights and corporate aviation. At IAD, corporate jets make up the largest share of the GA operations.
- This Master Plan will evaluate the needs to meet projected 2045 GA demand.

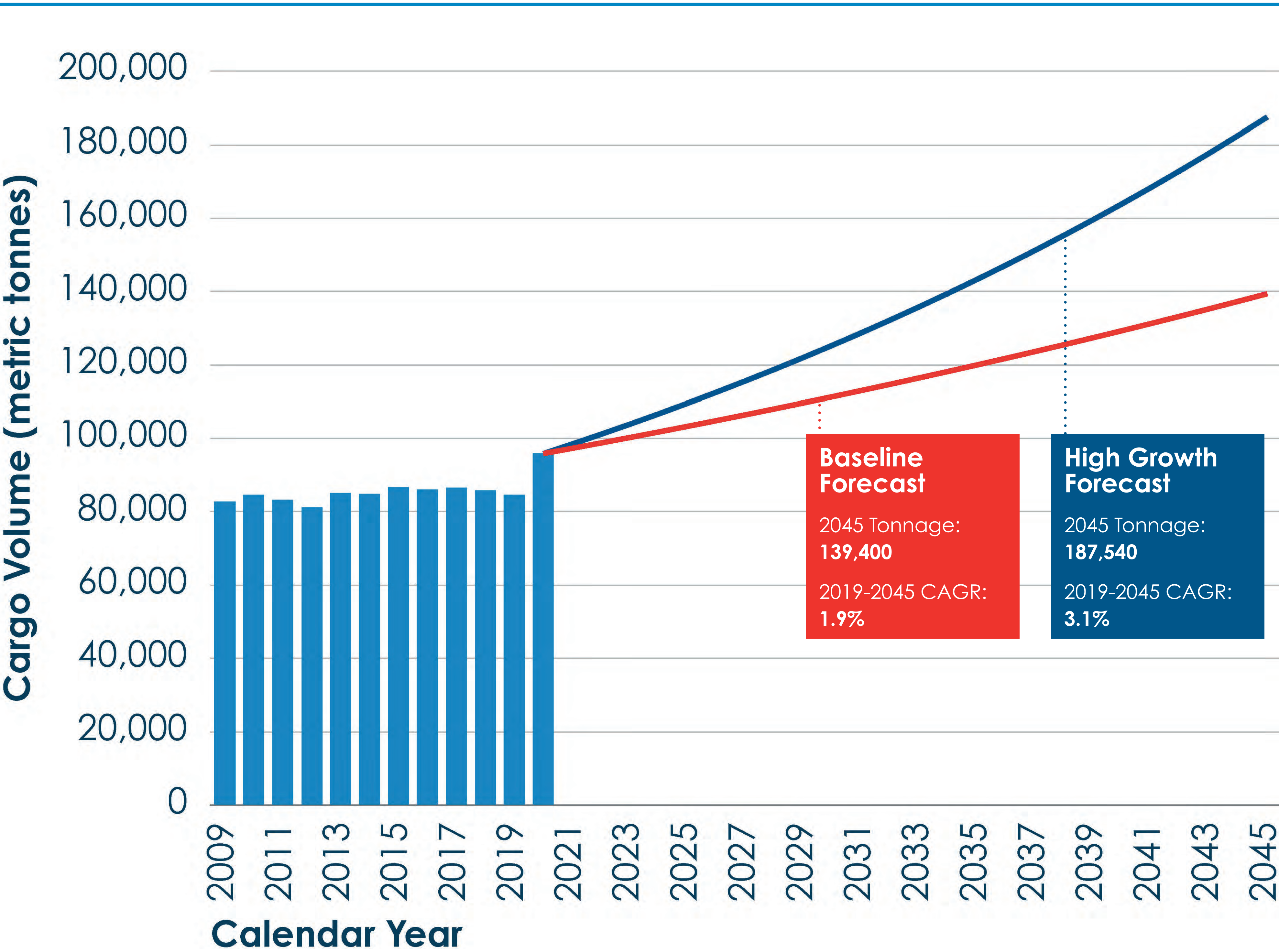


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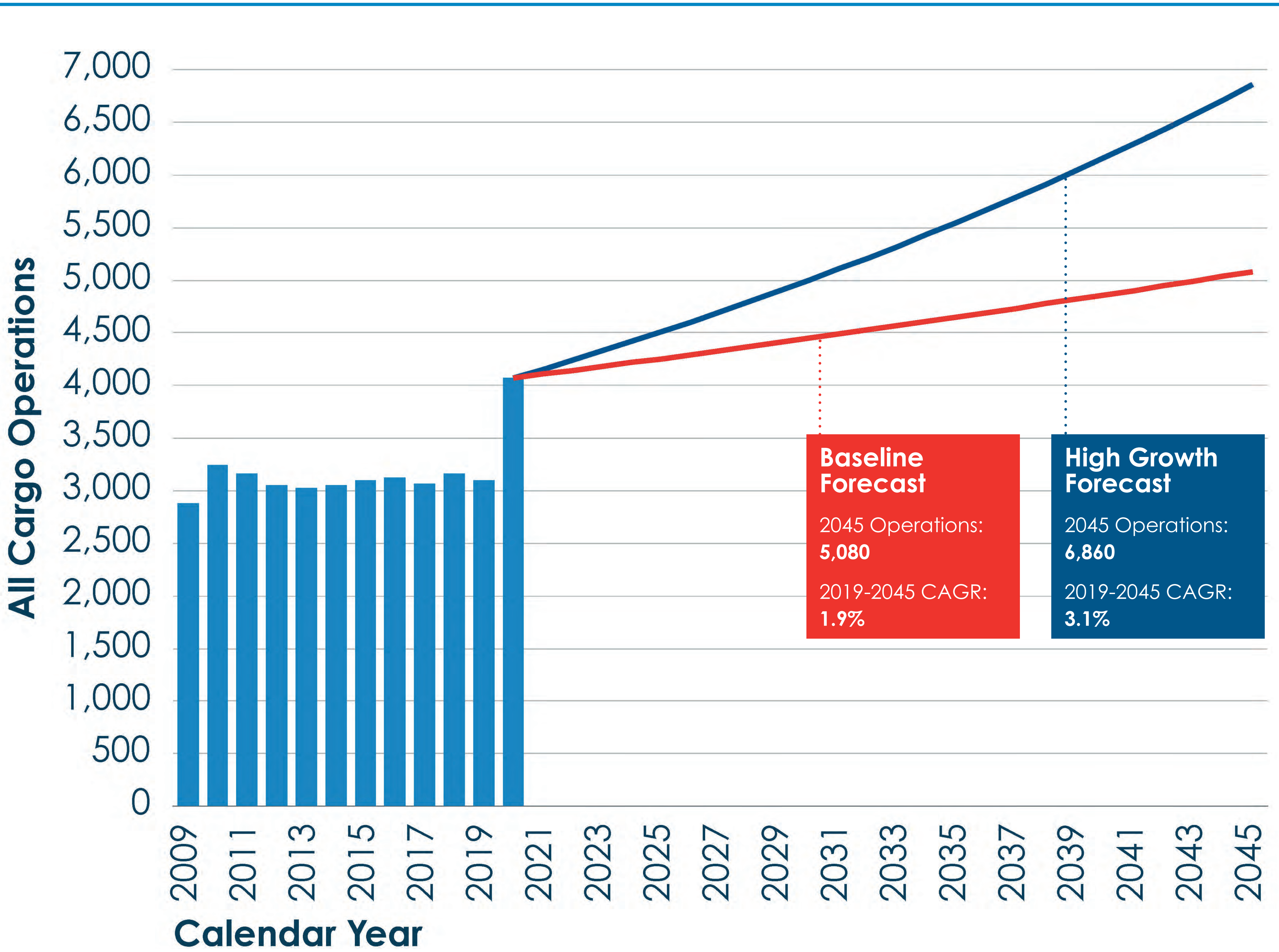
- Cargo Facilities
- General Aviation Facilities

Air Cargo Forecasts

Annual Cargo Tonnage



Annual Cargo Operations



Master Plan Focus

- Construct additional facilities to accommodate projected growth
- Replacement of antiquated cargo facilities
- A total of 94 acres anticipated to meet 2045 demand

Legend

Historical

Baseline Forecast

High Growth Forecast

NOTE: CAGR - Compound Annual Growth Rate

SOURCES: Metropolitan Washington Airport Authority, October 2020; Innovata (US DOT T-100 data), July 2021; Ricondo & Associates, Inc., July 2021.

General Aviation Forecasts

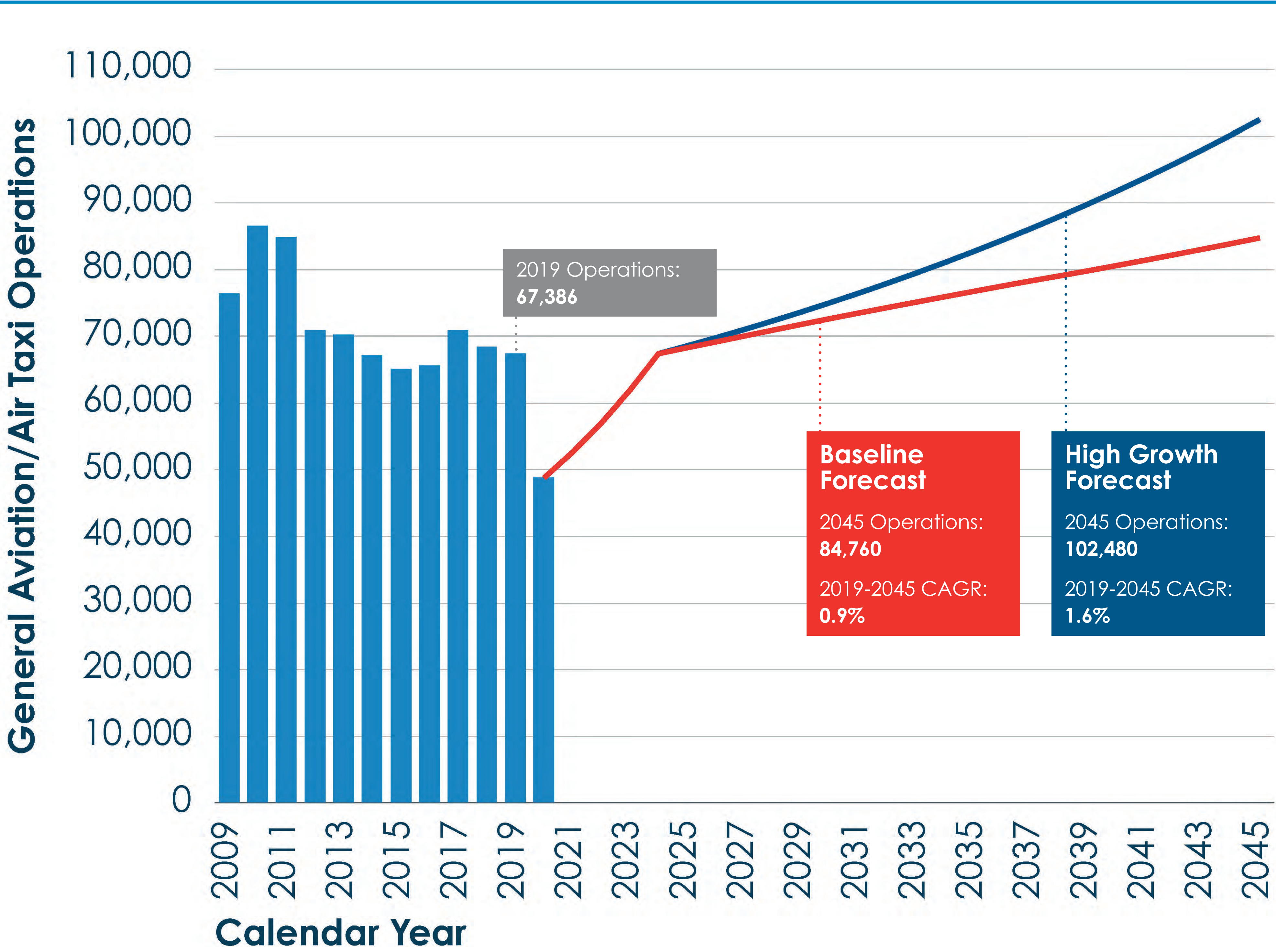
General Aviation Based Aircraft

| Year | Single Engine | Multi Engine | Jet | Helicopter | Total |
|------------------|---------------|--------------|------|------------|-------|
| 2019 | 7 | 6 | 56 | 2 | 71 |
| 2025 | 7 | 6 | 66 | 3 | 82 |
| 2030 | 8 | 6 | 78 | 3 | 95 |
| 2035 | 8 | 6 | 90 | 3 | 107 |
| 2040 | 9 | 6 | 102 | 3 | 120 |
| 2045 | 9 | 6 | 114 | 3 | 132 |
| CAGR 2019 – 2045 | 1.0% | 0.0% | 2.8% | 1.6% | 2.4% |

Master Plan Focus

- Construct additional facilities to accommodate future growth
- A total of 126 acres anticipated to meet 2045 demand (High Growth)

General Aviation Operations



Legend

Historical
Baseline Forecast
High Growth Forecast

NOTE:
CAGR - Compound Annual Growth Rate

SOURCES: Metropolitan Washington Airport Authority, October 2020; Federal Aviation Administration OPSNET, July 2021; Innovata, July 2021; Ricondo & Associates, Inc., July 2021.

Regional Roadway Network

Key Access Roads

Dulles International Airport Access Highway (DIAAH) — four-lane limited access highway that connects the Airport with the Capital Beltway (I-495) and I-66.

Dulles Toll Road (DTR) — eight-lane toll highway, parallel to the DIAAH.

Dulles Greenway — privately owned western extension of the DTR, that connects to Virginia Route 7 and US Route 15 at the town of Leesburg.

Virginia State Route 28 — six- and eight-lane limited access highway that runs north-south along the east side of the Airport, and provides access to and from Route 7 to the north and Route 50/I-66 to the south.

Virginia State Route 606 — four and six-lane roadway that runs along the north and west sides of the Airport.

US Route 50 — a six and eight-lane that runs along the south side of the airfield and connects to Route 28 and 606.



Legend

| | | | |
|------------------|--------------------|--------------------|--|
| Airport Property | Interstate Highway | Virginia Route 7 | Dulles Toll Road/Dulles International Airport Access Highway (DIAAH) |
| State Boundary | US Route 50 | Virginia Route 28 | |
| County Boundary | Dulles Greenway | Virginia Route 606 | |

Planned Regional Transportation Improvements

Key Transportation Projects

Route 28 / Dulles International Airport Access Highway / Dulles Toll Road / Dulles Greenway Interchange Improvements

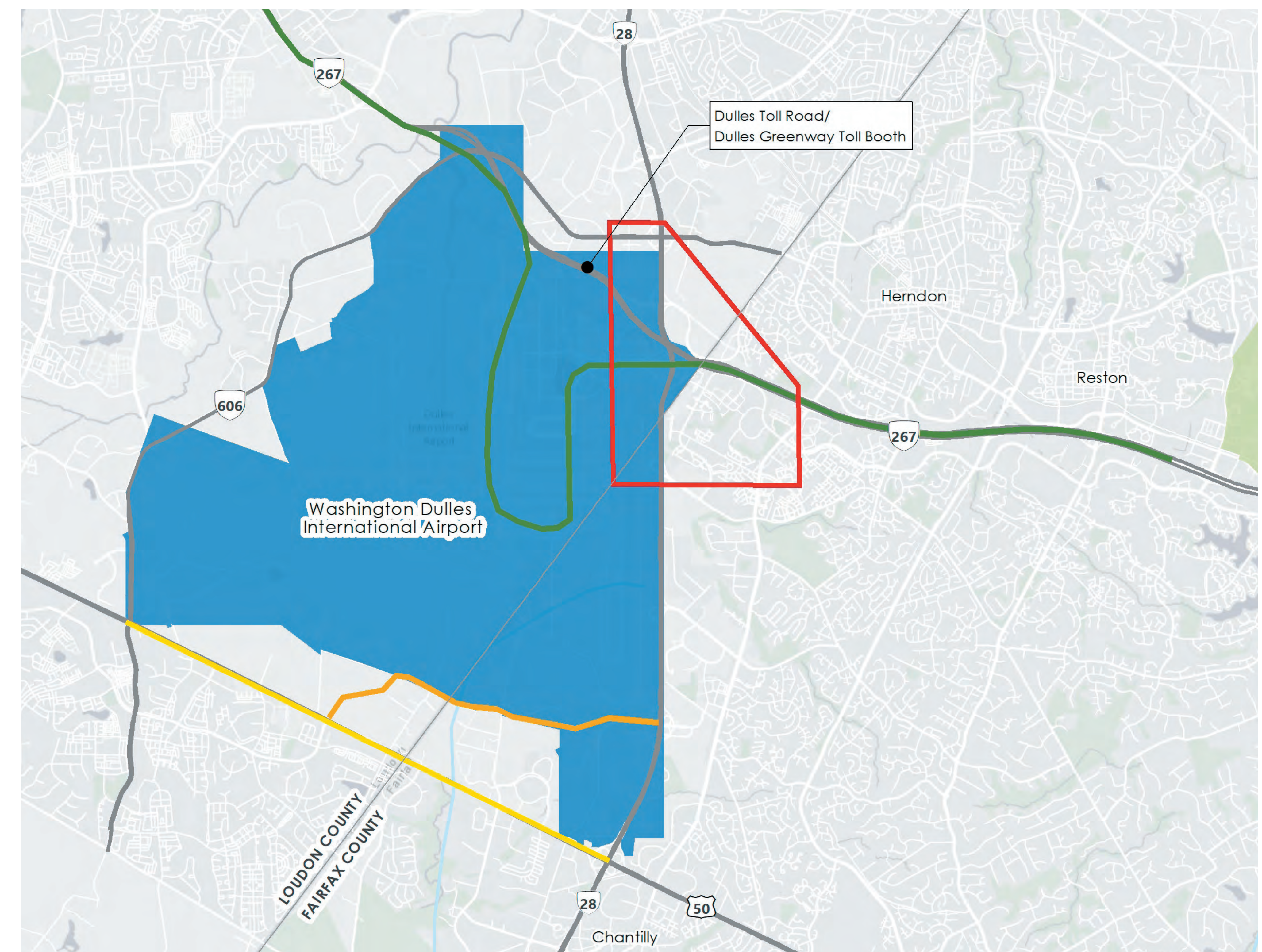
VDOT has recently completed a study, in close coordination with MWAA and many other stakeholders, for developing a project to improve capacity of the interchange complex.

US Route 50 / North Collector Road






Loudoun County is coordinating with MWAA on the proposed design, acquisition, and construction of a roadway from Route 50 at Tall Cedars Parkway to the Air and Space Museum Parkway interchange in Fairfax County at Route 28.

Route 50 Corridor Improvements

VDOT is collaborating with both Loudoun and Fairfax Counties to make safety and operational improvements to several of the intersections along US Route 50, between Gum Springs Road (Route 659) and Centreville Road (Route 657).



Legend

- | | | |
|---|---|---|
|  Route 28/Dulles International Airport Access Highway/Dulles Toll Road/Dulles Greenway Intersection Improvements |  US Route 50 Corridor Improvements |  Dulles Rail (Silver Line Phase 2) |
| |  US Route 50/North Collector Road |  Arterial Roadway |

Metro Silver Line – Phase 2

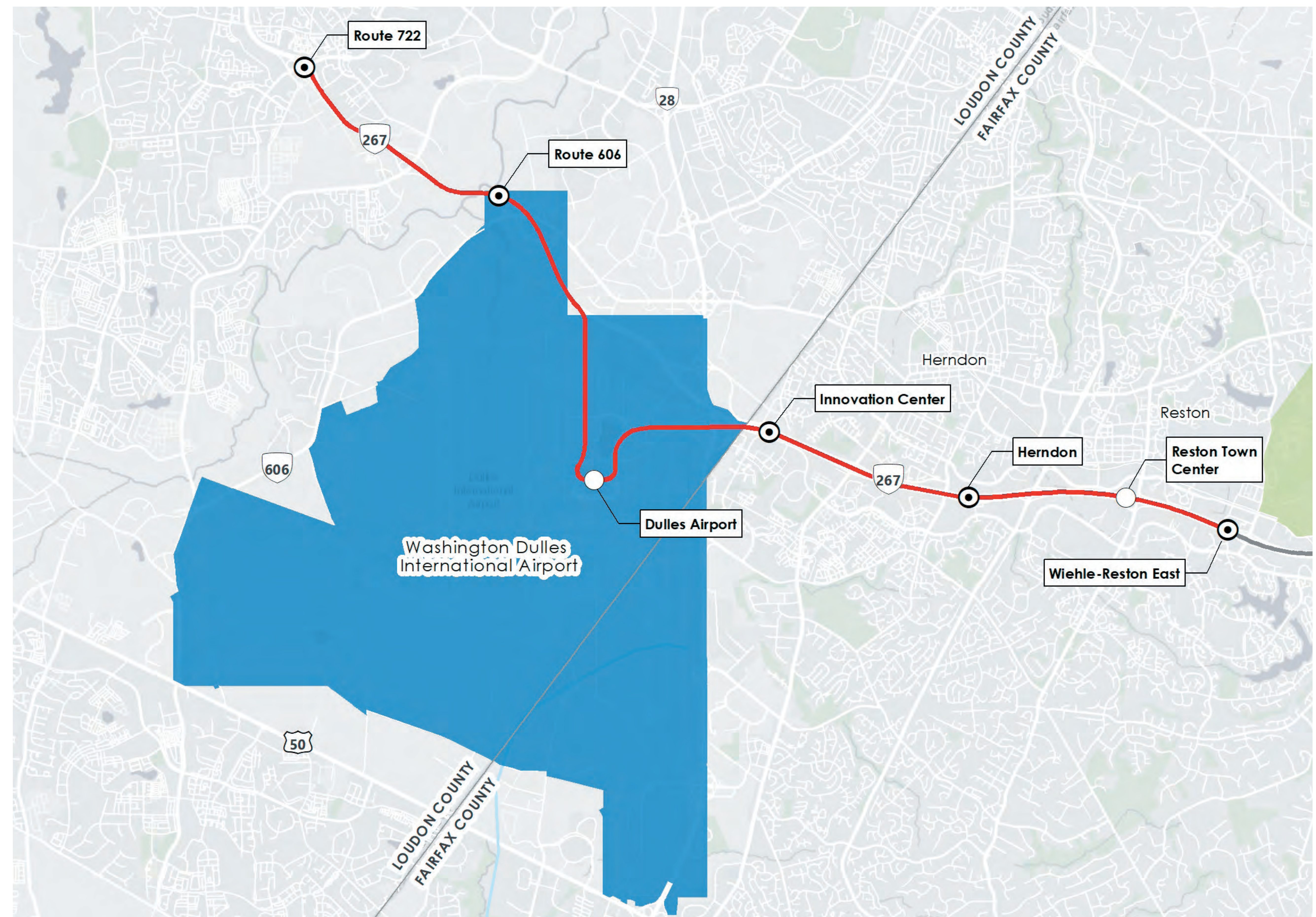
The Dulles Metrorail project will provide high-quality, high-capacity transit service in the Dulles Corridor and provide a transit connection between the corridor and downtown Washington, DC.

Phase 1

Phase 1 of the Dulles Metrorail project began in 2009 and was completed in 2014. It provided an extension of Metro service from the East Falls Church Station to the Reston-Wiehle East Station.

Phase 2

Phase 2 of the Dulles Metrorail project will continue the Silver Line from the Reston-Wiehle East Station to the Airport and to Ashburn in eastern Loudoun County. Phase 2 is anticipated to become operational in 2022.



Legend

- Existing Silver Line
- Silver Line Phase 2
- Silver Line Station (without parking)
- Silver Line Station (with parking)

Master Plan Sustainability Goals

Previously Defined Sustainability Goals

1 Reduce fuel use through electrification of transportation systems.

2 Increase efficiency of built environment (energy focus).

3 Reduce the amount of municipal solid waste generated and sent to land fills.

4 Develop and maintain a culture of sustainable administration.

5 Increase water use efficiency.

6 Encourage efficient use of public transportation.

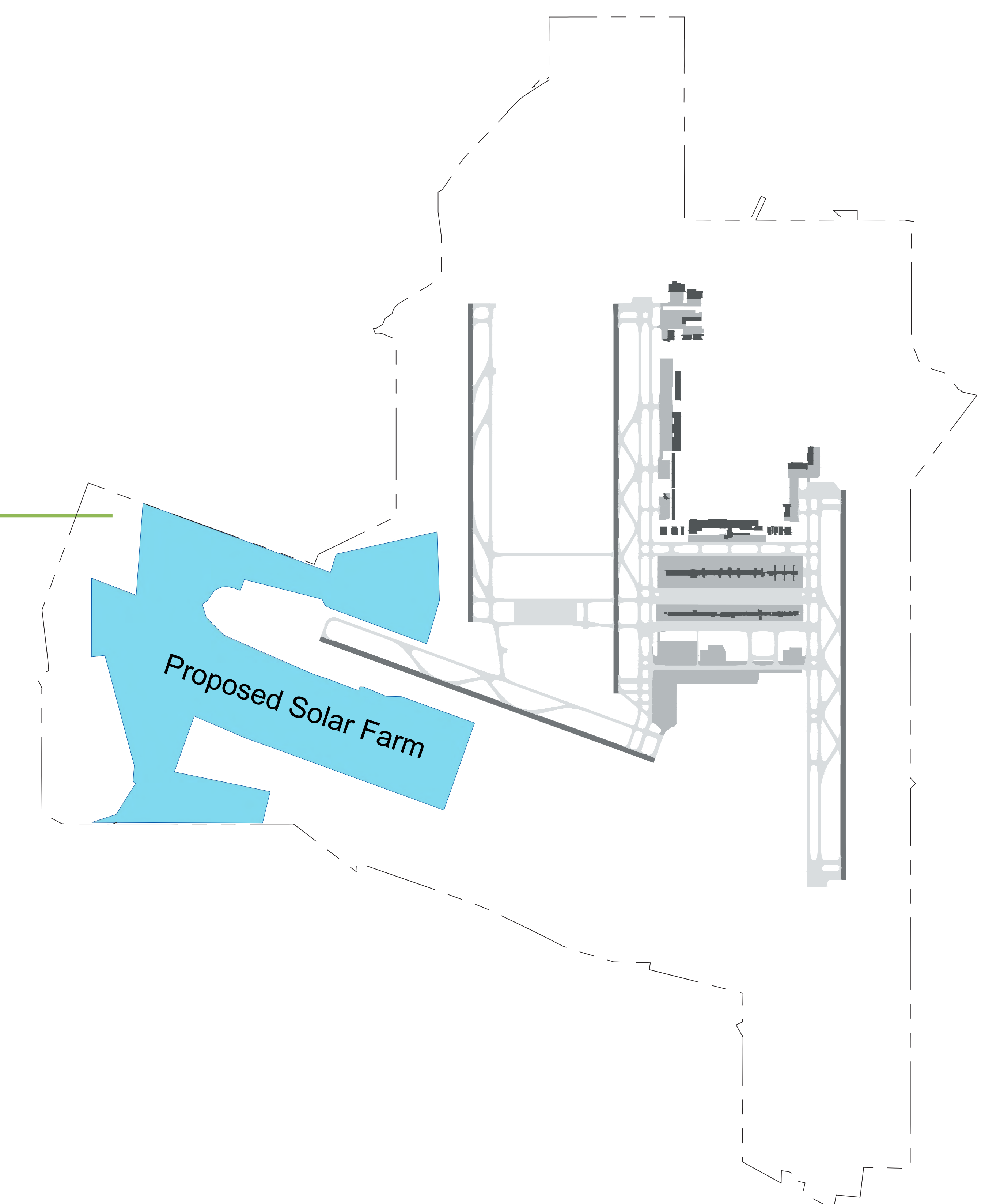
1. Consider facility and/or infrastructure improvements necessary to achieve the Airports Authority's sustainability initiatives identified in:

- a. 2020 Sustainability Plan Goals
- b. Airside Electrification Study / eGSE Technical Analysis Report
- c. Update Combined Heat and Power (CHP) Facility Benefit-Cost Analysis (BCA) Feasibility Study.
- d. Resiliency Assessment of Infrastructure Vulnerability
- e. Proposed Solar Farm
- f. The ongoing Stormwater Master Plan

2. Identify potential infrastructure improvements associated with other carbon neutrality initiatives:

- a. Conversion to Sustainable Aviation Fuels (SAF).
- b. Fleet and automobile electrification.
- c. General horizontal surfaces to support energy generation projects similar to the planned solar farm at IAD.

Solar Farm Project



Airport/Airline Support Facilities

Legend

-  Airport/Fleet Maintenance
-  Aircraft Fueling Systems
-  Flight Kitchens and Concessions
-  GSE Storage and Maintenance
-  Public Safety
-  Airline MRO
-  ARFF and Fire Department



NOTES:
ARFF - Aircraft Rescue and Firefighting
GSE - Ground Service Equipment
MRO - Maintenance, Repair, and Overhaul



Stay Informed



<https://www.flydulles.com/about-airport/master-plan/dulles-international-airport-master-plan>

